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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/713,479	11/15/2000	William Romine	QSOF0.050A	3574

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EXAMINER

LE, DEBBIE M

ART UNIT	PAPER NUMBER
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2167

DATE MAILED: 12/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/713,479

Applicant(s)

ROMINE ET AL.

Examiner

DEBBIE M LE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 19-25, 30, 32-38, 40, 41 and 49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 19-25, 30, 40, 41, 49 and 32-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicants' arguments filed on 6/23/04 have been entered. The claims 1-11, 19-25, 30, 32-38, 40-41, 49 are represented for further examinations.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-7, 9-11, 19-23, 30, 32-36, 40, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friske et al (US Patent 6,519,613 B1) in view of Ponnekanti et al (US Patent 6,363,387 B1).

As per claims1, Friske discloses a system for reorganizing a database while allowing substantially uninterrupted access to the database comprising:

reorganizing data (*data set subject to reorganization*) of an original table (fig. 3, # 302, *from the logical database 302*) by copying (*unloaded*) the data to a reorganized table (fig. 3, # 310, *shadow location*) (col. 6, lines 5-11, 25-33);

during the copying, allowing modifications to the data of the original table while collecting records of the modifications (*substantially continuous access to the database while the reorganization process is executing*, col. 1, lines 31-32, col. 3, lines 29-30);

when the copying completes, applying the modifications from the collected records (fig. 3, # 312, *log records*) against the reorganized table (*shadow location*) (col. 6, lines 33-36);

applying a first lock to the original table (as non-blocking drain to lock on an original database or a lock on a source, see col. 2, lines 35-35, col. 3, lines 6-8), the first lock blocking select data modification operations against the original table while allowing other operations against the original table (as a non-blocking drain does not prevent other processes from accessing the database while the reorganization is in progress, col. 3, lines 5-7, col. 6, lines 56-67);

applying any remaining modifications from the collected records against the reorganized table (col. 6, lines 37-39);

applying a second lock to the reorganized table (as the reorganization lock is in place, see abstract, last 3 lines), the second lock blocking select data modification operations against the reorganized table while allowing other operations against the reorganized table during the reorganization such that the reorganization table remain (abstract, lines 11-13 that "*The non-blocking drain does not prevent other requests on the database from being processed while the reorganization lock is in place*", fig. 4 # 404);

substituting the reorganized table for the original table (fig. 4, # 422, col. 6, lines 42-43, col. 9, lines 13-15); and

removing the second trigger lock, wherein additional more-restrictive locks to the original table are not needed during the method of reorganizing the original table, thereby providing clients of the original table continuous access to the data during the reorganization through at least the other operations allowed by the first trigger lock (fig. 4, # 426, col. 9, lines 16-19).

Friske does not explicitly teach applying a partial lock to the original table. However, Ponnekanti teaches applying a partial lock (as data row locking, to lock a data row, the row identifier or rowed, col. 10, lines 31-33). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a partial lock to a original table and a reorganization table would allow users of Friske's system to reduce locking overhead

and increase concurrency during database operations requiring access (e.g., query processing), as suggested by Ponnekanti (see col. 3, lines 23-27).

As per claim 3, Ponnekanti teaches wherein the other operations allowed by at least one of the first and second partial locks comprises one or more read-only operations (as scanning table determine whether the row qualifies and the status of the row, col. 3, lines 49-51).

As per claim 4, Friske teaches during the application of the modifications from the collected records (fig. 3, # 312) against (a arrow) the reorganized table (fig. 3 # 310), allowing additional modifications to the data of the original table while collecting additional records of the additional modifications (*reflecting changes which occurred to the original data set after the target data set was unloaded*, col. 6, lines 33-35); and

when the modifications and at least portions of the additional modifications have been applied against the reorganized table, applying the first partial lock to the original table (col. 2, lines 33-45);

wherein the step of applying any remaining modifications includes applying any remaining modifications or additional modifications against the reorganized table (col. 6, lines 36-39).

As per claims 5, Ponnekanti teaches wherein when the original table included one or more relational constraints, the method further comprises applying at least one of

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the one or more relational constraints to the reorganized table (as a Relational Database Management System, col. 5, line 55). It should be noted that the table is built in a RDMS, therefore, the relational constraint between the original table and the reorganized table must implement in the same manner in order to maintain synchronization between the two.

As per claim 6, Ponnekanti teaches wherein the application of the at least one relational constraint to the reorganized table includes applying a trigger procedure to the reorganized table (as a Relational Database Management System (RDMS), col. 5, line 55). It should be noted that the table is built in a RDMS, therefore, the relational constraint between the original table and the reorganized table must implement in the same manner in order to maintain synchronization between the two.

As per claim 7, Ponnekanti teaches wherein the application of the at least one relational constraint to the reorganized table includes applying a partial lock to another table (as a Relational Database Management System (RDMS), col. 5, line 55). It should be noted that the table is built in a RDMS, therefore, the relational constraint between the original table and the reorganized table must implement in the same manner in order to maintain synchronization between the two.

As per claim 9, Frishe teaches archiving the original table (as applying log records to the original table, see Fig. 3, # 312, #302).

As per claim 10, Friske teaches wherein the copying of the data of the original table to the reorganized table further comprises creating an original synchronization point, after which the records of modifications are collected (as synchronization points, Fig. 5, col. 7, line 13, col. 8, lines 23-52).

As per claim 11, Friske teaches wherein before the application of the second partial lock, the original table and the reorganized table are in synchronization with one another (col. 3, lines 43-45).

As per claim 19, Friske teaches a method for reorganizing an object in a database, the method comprising:

reorganizing an original object (*data set subject to reorganization from the logical database 302*) by copying data from the original object to a reorganized object (unloading and loading into a shadow location) (see Fig. 3, col. 6, lines 5-11, 25-33);

applying a lock to the original object (as the reorganization lock is in place, see abstract, last 3 lines), the lock blocking data modification operations from modifying the original object while allowing other operations to access the original object, wherein additional more restrictive locks to the original object are not needed during the method of reorganizing the original object, thereby providing clients of the original object continuous access to the data during the reorganization through at least the other operations allowed by the lock (see abstract, lines 11-13 that "*The non-blocking drain*

does not prevent other requests on the database from being processed while the reorganization lock is in place", fig. 4 # 404).

Friske does not explicitly teach applying a partial lock to the original object. However, Ponnekanti teaches applying a partial lock (as data row locking, to lock a data row, the row identifier or rowed, col. 10, lines 31-33). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a partial lock to a original table and a reorganization table would allow users of Friske's system to reduce locking overhead and increase concurrency during database operations requiring access (e.g., query processing), as suggested by Ponnekanti (see col. 3, lines 23-27).

As per claim 20, Ponnekanti teaches wherein the other operations include one or more read-only operations (as scanning table determine whether the row qualifies and the status of the row, col. 3, lines 49-51).

As per claim 22, Friske teaches

reorganizing an original object (*data set subject to reorganization*) by copying (*unloaded*) from the original object (fig. 3, # 302, *from the logical database 302*) to a reorganized object (fig. 3, # 310, *shadow location*) (col. 6, lines 5-11, 25-33);

applying a lock to the reorganized table (as the reorganization lock is in place, see abstract, last 3 lines), blocking data modification operations from modifying the reorganized object, while allowing other operations to access the reorganized object ,

wherein the reorganized object remains continuously accessible during reorganization (abstract, lines 11-13 that "*The non-blocking drain does not prevent other requests on the database from being processed while the reorganization lock is in place*", fig. 4 # 404).

As per claim 23, Ponnekanti teaches wherein the other operations include one or more read-only operations (as scanning table determine whether the row qualifies and the status of the row, col. 3, lines 49-51).

Claim 30 is rejected under the same rationale as stated in independent claim 1 arguments.

Claim 32 is rejected under the same rationale as stated in independent claim 19 arguments.

As per claim 33, Ponnekanti teaches wherein the other operations include one or more read-only operations (as scanning table determine whether the row qualifies and the status of the row, col. 3, lines 49-51).

Claim 35 is rejected under the same rationale as state in independent claim 22 arguments.

As per claim 36, Ponnekanti teaches wherein the other operations include one or more read-only operations (as scanning table determine whether the row qualifies and the status of the row, col. 3, lines 49-51).

Claim 40 is rejected under the same rationale as state in independent claim 22 arguments.

Claims 2, 8, 21, 24-25, 37-38, 41, 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friske et al. (US Patent 6,519,613 B1) in view of Ponnekanti et al (US Patent 6,363,387 B1) and further in view of Pereira (US Patent 6,122,640).

As per claim 2, Friske and Ponnekanti do not explicitly wherein the other operations allowed by at least one of the first and second partial locks comprises one or more structural modification operations. However, Pereira teaches a lock a source table (col. 7, lines 60-67) so that allows modification to the structure of the source being operated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a lock to a structure modification operations because it improves speed of the reorganization process to recreate the database.

As per claim 21, Friske and Ponnekanti do not explicitly wherein the other operations include one or more structural modification operations. However, Pereira

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teaches a lock a source table (col. 7, lines 60-67) so that allows modification to the structure of the source being operated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a lock to a structure modification operations because it improves speed of the reorganization process to recreate the database.

As per claim 24, Friske and Ponnekanti do not explicitly wherein the other operations include one or more structural modification operations. However, Pereira teaches a lock a source table (col. 7, lines 60-67) so that allows modification to the structure of the source being operated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a lock to a structure modification operations because it improves speed of the reorganization process to recreate the database.

As per claim 25, Friske and Ponnekanti do not explicitly teach wherein the one or more structural modification operations include consecutive data definition language operations. However, Pereira teaches a lock a source table (col. 7, lines 60-67) so that allows modification to the structure of the source being operated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a lock to a structure modification operations because it improves speed of the reorganization process to recreate the database.

As per claim 34, Friske and Ponnekanti wherein the other operations include one or more structural modification operations. However, Pereira teaches a lock a source table (col. 7, lines 60-67) so that allows modification to the structure of the source being operated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a lock to a structure modification operations because it improves speed of the reorganization process to recreate the database.

As per claim 37, Friske and Ponnekanti do not explicitly wherein the other operations include one or more structural modification operations. However, Pereira teaches a lock a source table (col. 7, lines 60-67) so that allows modification to the structure of the source being operated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a lock to a structure modification operations because it improves speed of the reorganization process to recreate the database.

As per claim 38, Friske and Ponnekanti do not explicitly wherein the one or more structural modification operations include consecutive data definition language operations. However, Pereira teaches a lock a source table (col. 7, lines 60-67) so that allows modification to the structure of the source being operated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a lock to a structure

modification operations because it improves speed of the reorganization process to recreate the database.

As per claim 41, Friske and Ponnekanti do not explicitly wherein the read only access to the data includes read-only access during multiple data definition language operations. However, Pereira teaches a lock a source table (col. 7, lines 60-67) so that allows modification to the structure of the source being operated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a lock to a structure (DDL) modification operations because it improves speed of the reorganization process to recreate the database.

As per claim 49, Friske and Ponnekanti do not explicitly teach wherein the reorganization application is further configured to apply a partial lock to the reorganized table, thereby blocking select data modification language operations while allowing one of one or more read-only operations and one or more data definition language operations. However, Pereira teaches a lock a source table (col. 7, lines 60-67) so that allows modification to the structure of the source being operated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to provide a lock to a structure (DDL) modification operations because it improves speed of the reorganization process to recreate the database.

As per claim 8, Friske and Ponnekanti do not explicitly wherein the original table includes a table name, and wherein the step of substituting the reorganized table for the original table further comprises renaming the original table another name and naming the reorganized table the table name. However, Pereira teaches wherein the original table includes a table name, and wherein the step of substituting the reorganized table for the original table further comprises renaming the original table another name and naming the reorganized table the table name (col. 4, lines 30-32). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to implement the step of renaming the original table and naming the reorganized table to another name as disclosed by Pereira's system. This would allow users of Friske's system and Ponnekanti's system who currently have pending transactions to the source table, should be continued until all users transaction are terminated.

Response to Arguments

Applicant's arguments with respect to claims 1-11, 19-25, 30, 32-38, 40-41, 49 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

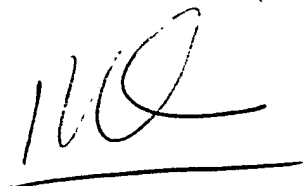
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEBBIE M LE whose telephone number is (571) 272-4111. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN BREENE can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



DEBBIE M LE
Examiner
Art Unit 2167

Debbie Le

Dec. 10, 2004.



GRETA ROBINSON
PRIMARY EXAMINER